

(No Model.)

J. HORSLEY.  
HIGH AND LOW PRESSURE EJECTOR.

No. 600,077.

Patented Mar. 1, 1898.

Fig. 2.

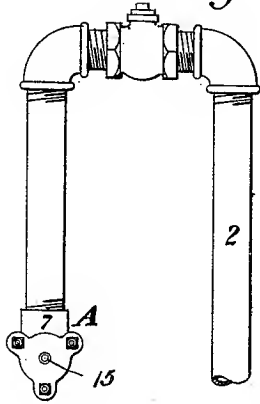


Fig. 1.

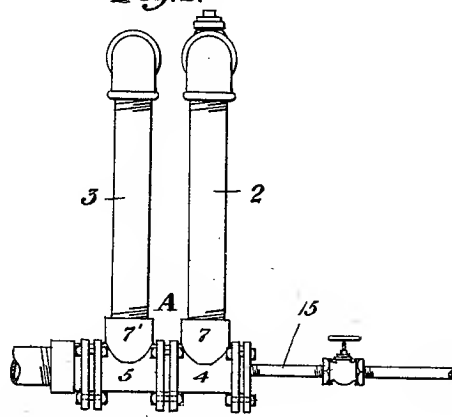


Fig. 3.

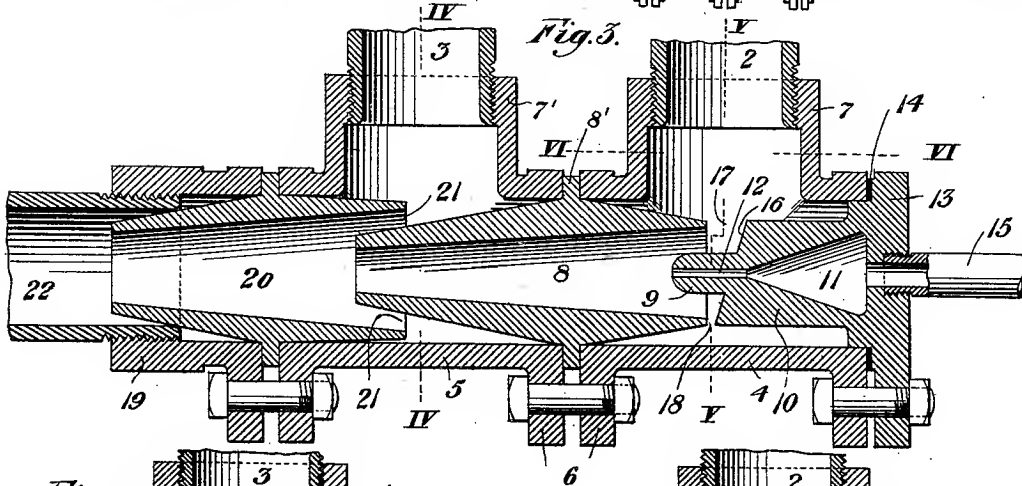


Fig. 4.

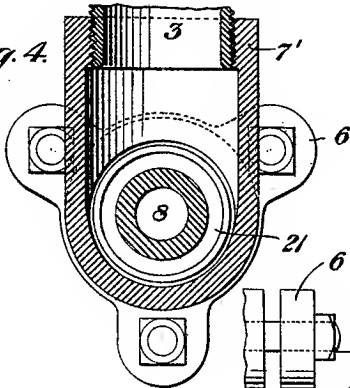


Fig. 5.

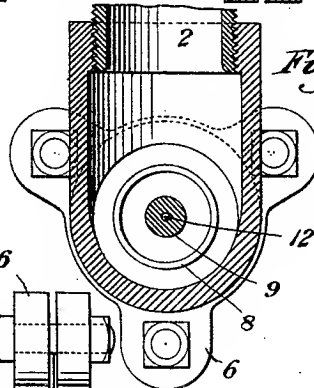
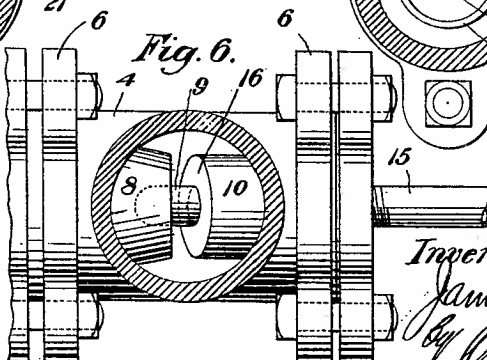


Fig. 6.



Witnesses:  
*Edwards*  
*Watson Large*

Inventor:  
*James Horsley*  
*W. M. Clarke*  
his attorney

# UNITED STATES PATENT OFFICE.

JAMES HORSLEY, OF COOPERSTOWN, PENNSYLVANIA.

## HIGH AND LOW PRESSURE EJECTOR.

SPECIFICATION forming part of Letters Patent No. 600,077, dated March 1, 1898.

Application filed December 17, 1897. Serial No. 662,264. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HORSLEY, a citizen of the United States, residing at Cooperstown, in the county of Butler and State of Pennsylvania, have invented or discovered a new and useful Improvement in High and Low Pressure Ejectors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view in side elevation of my improved ejector with high and low pressure connections. Fig. 2 is an end view thereof. Fig. 3 is a central longitudinal section on an enlarged scale. Fig. 4 is a cross-section taken on the line IV IV of Fig. 3. Fig. 5 is a similar view taken on line V V of same figure. Fig. 6 is a sectional plan view indicated by the line VI VI of Fig. 3.

My invention relates to ejectors, and is designed especially for use with oil or gas wells furnishing a limited amount of gas and for the purpose of conveying such gas from the wells to any point of consumption—such as, for instance, a boiler-furnace.

The device is composed of adjacent high and low pressure ejectors to which lead the pipes from the distant and nearby wells, respectively, the ejectors being arranged in tandem, with the high-pressure ejector and the induced current of gas serving as the impelling-current for the low-pressure ends. It will be understood that these pipes represent trunk-lines and may be branched, so that the draining-pipes from several wells may be led to the main pipe.

Referring now to the drawings, A represents the ejector assembled in its entirety, to which are connected the pipes 2, leading from distant wells, requiring high pressure, and pipe 3 from nearer wells, in which the pressure is not necessarily so high.

4 and 5 are T-shaped heads provided with flange-lugs 6, by which the parts are connected by bolts and having threaded coupling extensions 7 and 7', to which are attached the pipes 2 and 3. Between the heads 4 and 5 is clamped, by means of an annular flange 8', a central main barrel 8, tapering toward the exit end, the entrance end being located approximately opposite the center of the coupling

7, and into this end projects the teat 9, forming the discharge-terminal of the steam-nozzle 10. This nozzle 10 is formed of a cylindrical barrel of an outside diameter approximately equal to that of the outside of the main barrel 8, and the interior 11 is cored out in conical form, tapering toward the teat 9, through the center of which leads the steam-passage 12 of reduced diameter. At the back the nozzle 10 is provided with a flange 13, by which it is secured to the end of the coupling 7, with intervening packing-gaskets 14, and tapped to receive the steam-inlet pipe 15. At the front end the face 16 of the nozzle 10 is slanted, so as to leave the greatest opening 17 between such face and the end of the main barrel 8 at a point nearest to the discharge end of the inlet-pipe 7, while the opening 18 of least diameter is at the opposite side most remote from such point. This construction is of advantage in facilitating the flow of the gas, inasmuch as, as will be seen, the gas will flow in greatest volume most readily through the shortest and least-obstructed passage. This feature of construction I have found to be of great advantage in practice, and in ejectors having an inlet-pipe of two inches diameter good results may be had with an opening tapering from five-eighths to one-eighth in width.

Between the forward head 5 and the outlet-nozzle 19 is clamped a secondary hollow internally-tapering barrel 20, into the rear end of which is introduced the front end of the main barrel 8, with an intervening opening 21 approximately opposite the delivery end of the pipe 3, the contents of which are drawn by the induced current into the barrel 20, wherein the gas from both pipes and the steam from pipe 15 are commingled, and from which they are led to any point of consumption by pipe 22, inserted into the outlet-nozzle 19.

By my improved construction I have provided an ejector which operates very successfully and to the greatest advantage under the conditions I have described, and while I have employed it only in such a manner I do not desire to be confined to its application to gas or oil wells, as it is manifestly applicable to a wide variety of use, as will be readily understood by those familiar with the art to which it pertains.

The device may be used with oil, so as to spray it into a furnace as fuel with good results, and with the proper valves for regulating the flow a very accurate and convenient

5 regulation and adjustment may be secured.

Changes and variations may be made in the proportions, size, and construction without departing from my invention, and I desire to include all such variations as being within  
10 the scope of my invention. Instead of sloping the face of the nozzle 10 the adjacent face of the main barrel 8 may be sloped and that of the nozzle made straight, or both may be sloped, so as to form an enlarged opening at  
15 the inlet side.

I claim—

1. In a high and low pressure ejector, main and secondary heads provided with feed connections, a central main barrel internally tapered toward the end held between the heads, a secondary internally-tapering barrel secured between the secondary head and outlet-nozzle, into which the main barrel projects, and a steam-nozzle introduced into the inlet  
20 end of the main barrel, substantially as set forth.

2. In an ejector provided with a head having a lateral feed connection: a central internally-tapered barrel and a steam-nozzle secured therein, the adjacent faces of which  
30 are angularly disposed and arranged whereby the greatest opening is opposite the feed connection, substantially as set forth.

3. In an ejector provided with a central internally-tapered barrel secured within a head provided with a feed connection; a hollow steam-nozzle having a diameter approximately equal to that of the inlet end of the

barrel with its front face set at an angle to that of the barrel and a reduced teat projecting into the end of the barrel, substantially  
40 as set forth.

4. In a high and low pressure ejector, main and secondary heads provided with feed connections, a central main barrel internally tapered toward the end held between the heads, a secondary internally-tapering barrel secured between the secondary head and outlet-nozzle, into which the main barrel projects, and a hollow steam-nozzle having an  
45 outside diameter approximately equal to that of the inlet end of the barrel with its front face set at an angle to that of the barrel and a reduced teat projecting into the end of the barrel, substantially as set forth.  
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5. In a high and low pressure ejector, main and secondary heads provided with feed connections, a central main barrel internally tapered toward the end held between the heads, a secondary internally-tapering barrel secured between the secondary head and outlet-nozzle into which the main barrel projects and a hollow steam-nozzle having an outside diameter approximately equal to that of the inlet end of the barrel, and a reduced  
60 teat projecting into the end of the barrel, the adjacent faces of the barrel and steam-nozzle converging from the greatest opening at the inlet side to the least opening at the opposite side, substantially as set forth.  
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In testimony whereof I have hereunto set my hand this 23d day of October, 1897.

JAMES HORSLEY.

Witnesses:

PETER J. EDWARDS,  
C. M. CLARKE.